INFLUENCE OF MARITAL STATUS ON SOCIOECONOMIC AND

FOOD PRODUCTION VARIABLES IN RURAL

PARAGUAY

by

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To my beloved grand parents Elli and Richard Offenbach

Whatever you do in words or deeds, do every-
thing in the name of the Lord Jesus, giving
thanks through him to God the Father (Paul).

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INTRODUCTION

The struggle of life for many people in developing countries has become more and more critical within the last years. Scientists from the industrialized world, as well as educated elite from underdeveloped countries, have tried to introduce innovations to prevent disasters such as malnutrition, unemployment, overpopulation etc. and to increase the output of productive resources. Attempts at development have often had a more negative than a positive impact, because the complex survival functions of traditionalism have not been taken into account. Government policies have formed urban areas in the development process, further undermining traditional society strengths. Women have been at a disadvantage compared to men, because development policy assumes that they are consumers instead instead of taking into account their traditional activities as producers (United Nations, 1980). For example, it has been estimated for Latin America that women contribute 40% of the production (Staudt, 1981).

The success of a development project depends on understanding of the connections between the traditions and values of the society on one hand and the problems to be solved on the other hand. Innovations must be adapted to a country's situation and can not be transferred from one society to another.

The poorest households in developing countries are often female-headed. The number of female-headed households

in Latin America is high. In rural Paraguay, Fincher Laird
(1979) found 15.3% of the households were headed by women
(Table 1).

Table 1: Marital status of women in rural Paraguay
        Fincher Laird (1979).

Marital status	Percentage
Female Heads of Household	15.3 %
Female Consensual Partners	14.1 %
Wives	66.8 %
Others	3.8 %
Total	100.0 %

Of these female heads of household, 56.9% were single,
33.1% widowed, 6.1% divorced, 2.2% married and 1.7% lived
in a consensual union.

The job opportunities for women are scarce, which
means that they find mostly low-paying jobs with little
responsibility. In female-headed households, the women has
to divide her time between child-rearing and income-genera-
ting activities. This often leads to neglect of the chil-
dren, because her time must be used to provide food, clo-
thing and shelter for the family. The conflicts between
wage labor and the household responsibilities are called
the hidden costs of social reproduction (Nash, 1983). Ac-
cording to Hetier and Youssef (1983):

> Within a given labor demand structure,
> therefore, the least successful households may
> be those whose composition is ill-suited to
> carrying out necessary productive activities
> in both home and market.

The specific objective of the following study shall be to investigate the differences between households headed by women and those headed by consensual partners or married couples. Three independent variables, which are being married living as a concubine or being single, shall be measured in their influence on the following dependent variables: number of children, household size, number of room in the dwelling, employment of the male or female head, as well as of the oldest daughter and the oldest son, number of animals, food produced in the garden, and the kind of food consumed.

Analysis of these data, collected in the marginal areas of a town in the rural part of eastern Paraguay, shall be useful for implementing nutritional programs. Comparisons will be made with the findings in the rural environment in Paraguay. [The results will also be discussed by confronting them with statements made in the literature review.] The influence which marital status has on other important factors in life has to be analyzed because it affects every household in a society.

LITERATURE REVIEW

To be able to understand the living situation in a country, it is necessary to be acquainted with the history, the geography and the living conditions. Therefore, Paraguayan history, geography, and living condition will be presented to build a basis for interpreting the data.

The Republic of Paraguay is a landlocked country which is bordered by Brazil in the east, Bolivia in the north and Argentina in the south and the west. The mountainless country is 157,000 square miles in size. Many large rivers run through Paraguay. The population is relatively small, with 2.89 million people (1978). Population growth is around 3.4% annually, one of the world's highest growth rates (Haverstock and Hoover, 1977). The life expectancy at birth (average 1975-1980) is 66 years (Misereor Jahresbericht, 1980), and almost half of the population is under age fifteen. Approximately 65-70% of the population live in the countryside, many on the rivers which are important ways of transportation. Ninety-four percent of the farmers own less than 100 hectares, and 2.6% of the farmers own three-fourths of the land. Over 55% of the employed work in agriculture. In Paraguay, most of the farmers in are campesinos (subsistence farmers) (Der Grosse Brockhaus, 1979).

The Paraguay River divides the country into two very different parts. The Chaco has few people in its 95,300 sqare miles is mainly characterized by stub, forest, and savanna. The fertile eastern part of the country, referred

to as Paraguay Proper, has 61,700 sqare miles and the bulk
of the population.

The north of the country is tropical, while the south
has a semitropical climate. The temperature ranges from 15
to 37 degrees centigrade. The country receives sufficient
rainfall except in the northeastern part of the Chaco,
where a different vegetation exists. The eastern third of
the country, called the great Parana Plateau, has very
moist valleys with tall and broadleafed trees. Savanna is
predominant in the area between the Plateau and the Para-
guay River. The country has a few proven mineral resources.
Thus, the economy has traditionally be based on agri-
culture.

History of Paraguay

In 1537 the first successful Spanish colony was estab-
lished in Paraguay in the area of Asuncion, the capital of
the country today. A large Spanish settlement started a
cattle-raising industry and a textile mill. The coloniza-
tion of a great part of southern South America had its
origin in this area. Asuncion was an important center for
controlling the Spanish empire.

The Jesuits became the dominant group of missionaries
in the country. Their objective was to convert the original
habitants, to improve their education, and to increase the
family's welfare. The Jesuits tried to maintain Guarani,
which is still spoken today as the national language. The
Spanish culture, especially the religious practices, in-

fluenced the life style of the population. But the Jesuites tried to keep the Indian culture alive. (Haverstock and Hoover, 1977). The Jesuits founded large settlements of Indians which were autonomous in terms of the economy and administration. (Der Grosse Brockhaus, 1979). In 1767 the Jesuits were expelled from Paraguay because their great influence on the habitants was feared by the Spanish crown and its burocracy (Haverstock and Hoover, 1977).

From 1776 to 1810 (Der Grosse Brockhaus, 1979), Paraguay was a province in the established Vice royalty Rio de la Plata, whose capital was Buenos Aires (Haverstock and Hoover, 1977). After the revolution in Buenos Aires in 1810 (Der Grosse Brockhaus, 1979), and after Napoleon won the war against the Spanish monarchy, Paraguay declared its independence from Spain. Under the first dictator, Jose Gaspar Rodrigez de Francia (Haverstock and Hoover, 1977), who led the country from 1814 to 1840, Paraguay became independent from Argentina. De Francia did not want any outside economical or political influence (Der Grosse Brockhaus, 1979). He only kept a minimum of contact to the outer world, which he controlled himself. He supported the poor, the lower classes of Indians and mixed blood, but oppressed the whites, who considered themselves to be the upper class. Also he improved the agricultural technology and promoted the development of the industry. No constitution existed during his dominion (Haverstock and Hoover, 1977).

After his death in 1844, his nephew Carlos Antonio

Lopez (Der Grosse Brockhaus, 1979) took over the government
and started to organize the country with laws. Trades with
other nations became possible again, the church regained
its power, streets and railways were built and modern
agricultural technology introduced (Haverstock and Hoover,
1977).

His absolutist regime was followed in 1862 by that of
his son, Francisco Solano Lopez, who is Paraguay's foremost
national hero (Der Grosse Brockhaus, 1979; Kolinsiki,
1973). Francisco Lopez tried to support Uruguay, which was
in danger of being invaded by Brazil and Argentina, and he
also sought access to the sea. In 1865, Paraguay became
involved in a war against the Triple Alliance of Brazil,
Argentina and Uruguay. The Paraguayans lost a great battle
in 1868; afterwards the war was more or less a desperate
guerrilla struggle which went on until 1870 while the
Triple Alliance was already in control of major parts of
the country. Lopez, as well as four-fifths of the popula-
tion, died in this war. The victors occupied Paraguay for
the following eight years. A three-man government set up
under Brazilian and Argentinian auspices produced a presi-
dent in 1870, but Brazilian troops still controlled the
country (Haverstock and Hoover, 1977).

The national congress enacted the liberal constitution,
but unrest and coup d'etats inhibited political and econo-
mical development (Der Grosse Brockhaus, 1979). Different
parties were founded within the next ten years, but the

twentieth century still brought many changes of government.
To quote Haverstock and Hoover (1977):

> Some [changes of government] have been
> purely internal affairs, others the result of
> foreign intrigues, but none has involved major
> political issues. Almost without exception,
> revolutions have resulted from the interplay
> of personal egos and from fractional rivality.
> Until 1932, presidents in Paraguay served on
> the average only about two years.

Bolivia as well as Paraguay claimed the Chaco. It was
under the authority of different countries for many years.
Parguay wanted to regain land after the lost war of 1865 to
1870 (Haverstock and Hoover, 1977). First attacks took
place in 1928, but the time of the Chaco war is defined
from 1932 to 1935. Paraguay received the largest part of
the Chaco when peace was made in 1935 (Haverstock and
Hoover, 1977). The war is called the most serious, prolon-
ged and bloodiest conflict of the twentieth century in
Latin America. Reasons for this war were the rivalry over
the still unknown economical potential of the Chaco espe-
cially the petroleum deposits, and Bolivia's search for an
outlet to the sea following the amputation of its costal
zone as the result of the War of the Pacific with Chile.
Paraguay won the war against the much stronger Bolivia
(Kolinsiki, 1973) because of the skillful president, Euse-
bio Ayala, and a good military leadership (Haverstock and
Hoover, 1977). The Paraguayan investment in the Chaco war
was high (Kolinsiki, 1973). Sixty percent of the Paraguayan
population was killed. The war cost 80,000 lives, of which
an estimated two-thirds were Bolivian (Kolinsiki, 1973).

Very different rulers took the responsibility of lea-
dership in the country after the war (Haverstock and Hoo-
ver, 1977). From 1947 until late 1949, six presidents
followed each other in a period of 16 months. In 1942,
Paraguay joined the western allied forces in World War II.
It also participated in founding the United Nations Organi-
zation in 1950 (Haverstock and Hoover, 1977).

In 1954, Alfredo Strossner, whose father was a German
immigrant, assumed the presidency and has been reelected
ever since. He was the youngest and most competent of
Paraguay's general officers when he became the president
(Haverstock and Hoover, 1977). His leadership is characte-
rized by paternalism and oppression of opposition (Haver-
stock and Hoover, 1977). Even if Strossner himself de-
scribes the political system as democratic, people such as
Bishop Melano Medina say that the country has been impove-
rished in the worst sense --namely humanity. Torture, im-
prisonment, death and murder take place uncontrolled by
law. The military leadership makes its own decisions and
supports Strossner. The New York Times published the follo-
wing description of Paraguay by a citizen who wants to
remain anonymous (Vinocur, 1984):

> Add up the horrors and you get a substantial
> piece of ugly business. But what is interest-
> ing, really original, you could say - is how
> after 30 years a place can be run through
> perfect destillation of fear. By now it's only
> a touch, a nod. One man disappears, one woman
> is tortured. It is enough, and the Strossner
> people know it.

The party "Associacion National Republicana" (the

National Republican Associates, Partido Colorado or Colorado Party), which has been the main party since 1947, has, along with the military, supported the president. With the party's help, Strossner developed agriculture and the transport system (Haverstock and Hoover, 1977).

Paraguay today is structured as a presidential republic. The president is elected directly for five years. The legislature consists of the House of Representatives (60 members elected for five years) and the Senate (30 members) as a bicameral legislature. Eleven ministers are the executive organ. The official party in Paraguay, the Colorado Party, includes at least 70% of the population. Other parties also exist, but they possess little power (Haverstock and Hoover, 1977).

The Paraguayan Economy

Most of the population in Paraguay are employed in agriculture. Along with the electrical power of the Itapu dam, agricultural products provide a high amount of the country's export income. Because of the different climates, Paraguay has a large spectrum of of agricultural products. The main cash crops are soy beans, cotton, wheat, and tobbaco. But production is limited, since little improved technology is used. The major staple foods are manioc, corn, and sweet potatos, which are mainly produced in the area around the Parana River in eastern Paraguay. Most families also grow cow peas, watermelons, onions,

cabbages, lima beans, lentils, pepper, lettuce, squash, peas, string beans, radishes, tomatos, or carrots (Fincher Laird, 1979; Haverstock and Hoover, 1977). Sugar cane, yerba mate, and rice are also not unusual on small plots. The most common fruits are grapes, oranges, bananas, lemons, limes, guavas, coconuts, pineapples, cantaloupes, mangos, avocados, grape fruits, chiromoyas (custard apples), apricots, tangerines, and papayas.

Around 2.5% of the Paraguayan land is used for agricultural enterprises. Pastures and meadows make up 36.8% of the land area. Livestock enterprises are especially important in western Paraguay. Beef production is most common, but dairy cattle are found also. Fifty-five percent of the land is covered by forests. There, the production of tannin, tungoil, and petitgrainoil is commercialized. In addition, different kinds of wood are sold on the market.

Paraguay has many subsistence farmers; 42% of all farms are smaller than 12 acres. The limited size of land holdings reduces the possibility of employing modern technology on the small farms. The government encourages resettlement on new land to increase agricultural production (Haverstock and Hoover, 1977).

The transportation system is still underdeveloped. The main transport ways are the Parana River and its tributaries. The major port is Asuncion. Argentina gave the country the right of a free duty port through Buenos Aires,

Santos, Paranagua, and Autofagasta. Today, Paraguay is on the way to become one of the world's most important exportors of energy. The hydroelectric power plant on the Parana River, financed by Brazil and Paraguay at Itaipu is the largest in the world. Another dam at Jacireta-Apipe is now under construction. It will be financed by Paraguay and Argentina.

The average per capita income of the population is $300 annually. The country is still dependent on foreign investors, mainly from Brazil and Argentina, but also from European nations (Haverstock and Hoover, 1977).

Population Characteristics

At least four different population groups make up the majority of the rural population in Paraguay; Indians who are subsistence farmers on marginal lands, ranchers with large land-holdings, modern commercial farmers and peasant-farmers who cultivate small holdings of land they do not own.

Houses of the poor are often built of stakes, and many women still cook on the ground. The diet of the peasants is simple, usually a thick porridge of dried beans, peas and peanuts. Dairy products such as milk and cheese, as well as eggs and chicken, are also part of the diet.

Most women are employed in agriculture. Their employment opportunities include cigar making, needlework, lace making, and laundrywork. They also may pick cotton. The

population is 90% Catholic, but around 25,000 Protestants live in Paraguay. Ninety-five percent of the population are mestizos, and 2% of the population are Indians who mainly belong to the tribe of the Guarani. The rest of the people are either of European or Asian decendent.

About 20% of the Paraguayans are illiterate. Children receive a general compulsory education from the seventh to the fourteenth year. Primary school is free. About 60% of the students leave school before they graduate. Two universities exist in Paraguay, which offer together 11,000 places. However, most of the families who can afford it send their children abroad (Haverstock and Hoover, 1977).

Fincher Laird (1979) defines low income families in Paraguay in 1978 as those who earned less than a per capita family income of 20,000 Guaranies ($160) per month. Approximately 53.6% of all rural families were included in this group. Farmers are more likely to be poor than non-farmers. However, the value of home production his added to farmer's total income. Fincher-Laird estimated that home production accounts for a 45% increase above their cash earnings. For an income of G 20,000 this amounts to a total per capita income of G 36,400.

The average family size in Paraguay is 5.8 persons. Female-headed households tend to be smaller than those headed by males ($\bar{X}=4.5$). Approximately 10.7% of Paraguayan households consist of one or two members, 39.8% of three to five, 38.3% of six to nine and 11.3% of ten and more members. The family structure of Paraguayan households is pre-

sented in Table 2 (Fincher-Laird, 1979):

Table 2: Family structure in the Paraguayan households

Family type	percentage
nuclear - organized	66.0%
nuclear - disorganized	9.4%
extended - organized	7.0%
extended - disorganized	14.9%
others	2.8%
total	100.0%

The classification "disorganized" means that one partner is
absent. This often brings economic problems for such fami-
lies. "Extended" means that two nuclear families or three
generations live together. In nuclear families both parents
and their children live together (Fincher-Laird, 1979).

Developing countries' characteristics:

Developing countries can to be seen in a transition
from feudalism to capitalism. To cite Deere (1977), who
worked in Peru:

> "The development of capitalism is an uneven
> process that both improves and deteriorates
> women's socioeconomic condition. The socioeco-
> nomic condition is improved for both, men and
> women, but the status of women and women's
> work deteriorates."

The economic sector in developing countries is charac-
terized by a strong informal sector. The smaller formal
sector is characterized by a formal rationality (Weber,
1978), which bases all decisions on economic calculations
and the bottom line of profit. The goal of a modern society

is mainly to increase capital output or profit. Changes are accepted as a normal element of the economic activity. The state is supposed to guarantee the universal standards. In order to do so, a government must be strong, often not true in developing countries. Dictatorship often suppresses free economic activities by controlling economic interaction and being dependent on traditional and/ or newly created authority structures. This makes it difficult for any program or policy to be only economically oriented, leaving out the traditional authority structure.

The formal sector is also characterized by a legal rational authority between people. In it, there is a certain stability of employment and benefits, which result from regular relationship to the market. Economic benefits arise through this formality because the thinking and decision-making processes are economically related. This means that the relationship between employer and employee are defined by written roles.

The informal sector is based on substantive rationality, where decision making is dependent on an absolute value or goal. The informal authority structure plays a dominant role in the economic decision-making process. Profits and wages are not received regularly; the relationship to the market is therefore irregular. The employee has no formal contract or organisational chart (Flora and Flora, 1984).

The population in developing countries has to find a

way to use both rationalities to their advantage. Develo-
ment can be influenced negatively if both philosophies are
not considered.

The impact of migration:

   To faciliate the analysis of data from rural Paraguay and
to compare them with other findings in literature, the
following discussion of the impact of migration on the
life-situation of people, especially women, in developing
countries is presented.

       As the developing countries become more and more in-
fluenced by industrialized societies, they adopt inno-
vations for industry and agriculture. Often the position of
women as producers is not taken into account as such inno-
vations are introduced (Staudt, 1981). With increasing
commercialisation of agriculture, women may lose their
subsistence activities. This affects the family's depen-
dence on the cash ecomony (Nash, 1983), because when they
produce cash crops, women do not always share the cash
income. This shows that the women do not always benefit
from innovations.

       Migration often results from the penetration of capi-
talism, when people need to earn cash, which increases the
competition on the labor market. To quote Nash (1983):

          The enforced migration in separatist
       policies of development indicates the destruc-
       tive potential of capitatist penetration where
       the social reproduction of use values is not
       just ignored but deliberatly subverted as the
       economy is devoted to production for exchange
       and profit.

Rapid population growth, increasing mechanization and li-
mited physical resources lead to migration, as the laborer
can not be employed in agriculture anymore. That can lead
to too many people seeking jobs in urban areas and small
towns. (Chaney, Simmons and Staudt, 1979) The absorption of
unskilled laborers has become a problem in many places in
the third world. This is partly caused by an uncareful way
of introducing technology, which changes the resource allo-
cation within the family in terms of money and labor use.
The result may be decreasing family welfare and an increa-
sing social disorganisation.(Nash, 1983). Children's eco-
nomic activity is reduced in urban areas, which may lead to
significant diseconomies. Urban children cannot partici-
pate as farm laborers as do rural children. The payment for
housing and food by the urban poor is higher than in the
countryside, while at the same time there are more goods
available (Ward and Sanders, 1980).

In Latin America, women are more likely than men to
migrate to urban areas. They are often very young (age 10
to 19), and many become unmarried mothers in the cities and
towns.(United Nation, 1980). The high number of female-
headed households in urban areas is partly caused by an
oversupply of young women compared to men. This results in
an increase of more temporary or sporadic sexual relation-
ships, where the woman is left on her own when the union
dissolves (Hetier and Youssef, 1983).

Men are more likely to be temporary rural to rural or

rural to urban migrants in Latin America. Female-headed households in rural areas arise because the husband leaves home to take a part-time job in another part of the country (United Nations, 1980). This is semiproletarianization, as agricultural activity and wage labor are both necessary to support the household. The male takes a low wage job which does not require education in the formal worksetting of the industry (Flora and Santos, 1984). Female-headed households, especially the large ones, are often characterized by a deteriorated living standard (United Nations, 1980).

Urbanization in general has advantages as well as disadvantages. The advantages are that women may be more politically organized (Flora and Santos, 1984). This is less likely to happen the less educated these women are and the more time they have to invest in providing the necessary living requirements. Access to education is higher in urban areas, but this is counterbalanced by low-paying, menial jobs, which are underevaluated. As more of the country becomes involved in cash economy, work in the household is less respected because it is not included in the gross national product, not traded on the market, and is not wage-earning. The concept then is labor for money and not labor done for another person (Charlton. 1984).

The question is why so many families still migrate, as their wellbeing so often decreases in the cities. Besides the already mentioned reasons, there are unrealistic expectations of urban life. The big difference between the urban rich and poor does not penetrate to the rural population.

Greater nutritional deficiencies are more likely and sensi-
tivity to increased income is smaller in the cities (San-
ders and Ward, 1980).

Female-headed households:

Female-headed households play an increasingly impor-
tant role in developing countries today and are therefore
center of the analysis in this study. They are households
in which no male partner of the female head is present and
where the women is in charge of providing life necessities
for the family by taking on all responsibility herself.
They occur through migration, mechanisation, urbanisation,
and the marginalization of the low income workers. These
changes take place together with the modernization process
of the society, which means the society in the developing
country begins copying the life style of the Western world
(Merrick and Schmink, 1983). Female-headed households have
the lowest incomes because women lack the resources of
production. They have often more dependents and fewer se-
condary earners than male-headed households (Buvinic,
1983). The lack of fit with the existing opportunities in
the labor market helps to explain the high proportion of
poor households headed by women (Schmink, 1984). To cite
Charlton (1984): "The powerlessness of the poor in the
world reaches its peak in the poor women."

Female-headed households tend to be smaller than those
headed by males. The average size for Paraguayan families

is 5.8. Small families with less than six members are fewer in the low income group than large families: 41% compared to 66.3% of the larger households. Female-headed households have an average size of 4.5 members, male-headed, 6.1 (Fincher-Laird, 1979).

In Paraguay, 27% of the urban households are female-headed, compared to 15.9% of the rural households. Finsher-Laird defined female-headed households as disorganized, because the partner of the other sex was absent. She found female-headed households were predominantely disorganized. Some concubines declared themselves to be the head of household because they thought of the male as a transient partner. Female heads of household tend to be older, more sedentary and less well-educated than other females. The majority seems to be either former consensual partners or widows. The proportion of consensual unions decreases with increasing age. The number of female-headed households increaes with age. Female-headed households in Paraguay are poorer, smaller and less likely to be dependent on agriculture as the primary source of income. The occupational classification by sex of head in Paraguay is shown in the following table by Fincher Laird (1979):

Table 3: Occupational classification by sex

Primary economic activity	female heads	male heads
agriculture (farmers)	36.3%	57.7%
agricultural laborers	11.2%	7.8%
commerce	9.7%	9.2%
manufacturing	7.8%	10.5%
service	6.3%	3.0%
home crafts	5.5%	1.0%
home processing food	6.5%	2.8%
animal industry	5.5%	2.2%
others	1.9%	5.2%
transferences	9.4%	0.6%

The net income per capita is, as already said, different for different household types. This is shown by Fincher-Laird (1979) in her data report from Paraguay:

Table 4: Income classes in Paraguay

Per capita income	Female heads	Wives	Concubines	Total
Less than G 20 000	60.7%	51.2%	56.6%	53.5%
> than G 20 000	28.9%	47.5%	42.5%	43.8%
No income	10.4%	1.3%	0.9%	2.7%

In Paraguay, the standard of living is lower for female-headed households . This is reflected by the household possessions and other socioeconomic indicators. Fincher Laird's report (1979) indicated that female-headed households in Paraguay face the same problems as those in other developing countries.

Income and employment:

Income and employment have to be considered because

they partly determine the living standard of a family.
Poverty can be defined as low level of consumption per
person. Households in Latin America are poor for many
different reasons; the adult members may not find work, may
be paid badly, or may have too many dependents. If there is
a large number of people in the household who do not gene-
rate income, the household can be poor, although the total
income is relatively high (Musgrove, 1980). However, if
there are more wage-earning adults and less children, a
family is less likely to be poor. When four or more chil-
dren exist per adult, the family has a 70% probability to
be poor. If one-third of the members of the household work,
the chance of being poor drops to 20%, as Musgrove (1980)
found using data from many Latin American countries. Low
wages and a high dependency occuring together virtually
guarantee poverty for a family. Musgrove also writes that
population growth is intimately connected with the distri-
bution of welfare and not only with the overall growth rate
of the economy or its use of resources. To quote him:

> A rapid demographic growth of the popula-
> tion is a problem not so much because it means
> rapid expansion of a young adult population
> for whom it may be difficult to create jobs,
> as it means a large and rapidly growing number
> of children who must almost necessarily be
> dependent.

The household is assumed to be a group of people who
share resources, income and labor. Household resources are
assumed to be divided equally among household members. In
some societies in developing countries a division of income

exists between the male and the female . This means that they do not share income or resources, although they may lend each other money. If the man's income increases, the income of the woman and the situation of the children does not necessarily change. If the women's income increases, the whole family, including the children, profits (Staudt, 1981).

The household exists because of productive activities which take place at home or in the market setting. These activities are preferably done by a specific age and sex group. To quote Merrick and Schmink (1983):

> The success or failure of a household's income generation will be influenced by the fit between household consumption and the labor demand structure in both home and market place.

Inequitable distribution of income and the concentration of investment in certain capitalist sectors are characteristics of development in Latin American countries. The penetration of capitalism leads to a greater dependence on monetary income and generates a heterogenous market structure which excludes large segments of the population from a regular income. Therefore the lower classes cannot participate in the consumer market in the same way as the upper classes. To quote Schmink (1984) in her definition of standard of living:

> Thus the domestic unit's overall standard of living will be derived from a combination of monetary income from different sources, benefits associated with employment, collective services provided by the state and the private sector, and non-monetary imputs from home production and wider exchanges.

It is not realistic to observe the individual family in
isolation, because each is linked to others in the commu-
nity's social or cultural groups (Nabarro, 1984).

In all societies there exits a sexual division of
labor within the smallest unit, the family. This means that
specific tasks are done by the male or female partner in
general. Normally, the division of labor leads to a subor-
dination of the women's work as capitalism penetrates the
original labor division on the farms. Division of labor by
sex in the formal labor market serves to cheapen labor. The
jobs women get are lower paying because they require less
skills and also have no or very limited authority or power.
The capitalistic system benefits from the low payment of
women's productivity. Domestic work is also women's respon-
sibility, which is why they are disadvantaged in terms of
generating income. Women's labor is used when needed but is
cut back during times of recression (Mackintosh, 1981).
Rural women often can be classified among the poorest of
the poor. Their status depends on a variety of factors:
culture, changing modes in agricultural production, availa-
bility of public services such as education and credit,
migration, political instability, communication systems
etc.. The increasing need for cash leads to the declining
status of unpaid work. Women have to seek employment out-
side of the home, which is very difficult because of high
competition for those jobs (Charlton, 1984). The work they
perform is often low paid. The work place may be unsanitary

or unsafe. Only a few promotion possibilities may exist. Often, there is job insecurity and exploition in terms of wages and hours. All this is characteristic for the poor in general, but especially for women (Chaney, Simmons, and Staudt, 1979). They have less mobility, less access to resources, and more responsibilities within the household (Charlton, 1984). There is job-sex-stereotyping that may increase the number of job opportunities in certain stages of industrial development, but it also inhibits women's penetration into better paid jobs with more societal benefits as industialization proceeds (Chaney, Simmons, and Staudt, 1979). Women's earnings increase much less with increased eduction than males normally do (Merrick and Schmink, 1983).

Because job opportunities in the formal market, where a regular minimum salary and institutional health benefits are assured, are so limited, women often work in the informal sector (Merrick and Schmink, 1983). The U.S. Agency for International Development found that 20-50% of the people working in cities work in the informal sector; they often have small businesses such as street vending. The most important female occupations are sales and prostitution in most urban areas in the world. The majority of the people working in the informal sector are women. Their engagement in petty or small scale retail trade means that they spent long hours on a side walk or a crowded market. Women often do handicrafts such as embroidery, knitting, or basketery, because these are combatible with their household obliga-

tions. But the money earned is usually not related to the amount of work required. This also contributes to keeping women in the non-modern work sector. The disadvantage of handicrafts is also that they are sold in the international market or to tourists, where sales can not be guaranteed. The marketing is often done and controlled by men so that the price and the disposition of the products is in their hands (Charlton, 1984). Some women are also engaged in domestic work, but they are underpaid and lack job security or chance for advancement.

One of the reasons why there are so many more women engaged in informal work is that they are often poorly educated. This makes them less competitive than men who are more likely to have some non-agricultural skills (Chaney, Simmons, and Staudt, 1979). Nevertheless there are some opportunities in small industry where the production of the commodities is labor intensive and does not require high technology. The job income relationship can be seen as a vicious circle because the growth of the non-food related industry is dependent on a higher income of the families who would be able to consume more (Charlton, 1984). Channey, Simmons and Staudt (1979) give as other reason for the higher employment of males in the formal sector:

> The costs of job vacancy for women may also be higher if facilities which increase role compatibility are included in the job creation costs — day care centers, maternity benefits, etc..

For many women in developing countries, it is difficult

to be employed and to discharge all their domestic respons-
ibilities as well (Schmink, 1984). Children, even if they
are desired, cost in terms of nutrition, health and educa-
tion. Also, there are some opportunity costs for many
families as the women can not work immediately after child
birth. Later, the women's wage labor competes with house-
hold responsibilities (Nash, 1983). Households with small
children normally experience more financial pressures, as
the children are not able to contribute to household income
and the adult female must invest time caring for them
(Schmink, 1984). Because of women's role in reproduction,
they are responsible for the socialization of their chil-
dren. The contact remains close until the daughters marry
and the sons start working, about age 10 to 12 (Babb,
1980). The children's involvement in production is impor-
tant for the survival of the household (Staudt, 1981). They
take over economic responsibility very early. Children
generally remain loyal to their parents throughout their
lives. In the process of development, this relationship can
be disturbed if the children may find access to the upper
classes through schooling (Babb, 1980). The mother-child
relationship will be influenced by economic realities the
family faces because the financial situation determines how
much time she can spent with her child (Sanjur, 1982).
Sometimes children are mainly educated by relatives or they
just grow up on the streets (Merrick and Schmink, 1983).

The role of the children is very different in female-

headed households. The woman has to work to provide the
living; therefore the oldest daughter normally has to sub-
stitute for the mother either at work or at home. Thus, her
education is interrupted. The children in general have to
participate in the income-generating process earlier than
in households with a male. Because there exists no male
breadwinner, the danger of a low monetary income and an
inadequate nutritional diet increases. Access to urban
services may be smaller, so that improvement quality of
life seems unlikely (Merrick and Schmink, 1983).

Cooking facility:

The type of cooking facility is related to the living
standard of people living in developing countries. Many
poor people in developing countries are still cooking on
the ground. The simplest form of stove is one which has
only three stones to support the cooking pot. Only 10% of
the heat from the fire is used for cookery. This is a
dangerous waste, since most developing countries have prob-
lems with fuel supplies. Approximately 90% of all develo-
ping countries use firewood as their main source of energy
(although lesser amounts of gas, electricity, and solar
energy are also used). Today, the world's population grows
faster than the forests. This will have terrible consequen-
ces for the world's poor, because the price for fuel will
become too high to be affordable for them. Even at present,
the prices for fuel are often opportunity costs of food

(Cremer, 1983). Water and fuel often limit the conservation
and preparation of food (Charlton, 1984).

Food habits are influenced by the methods of cooking
and preparing food and also by nutritive value. In develop-
ing countries different methods of preparation required for
certain newly introduced foods may be the reason for ac-
ceptance or rejection, since the cooking time and heat
determine the amount of energy needed. The population in
developed countries see food preparation methods more as a
function of health and convenience (Sanjur, 1982). For
almost all the households in the world, the cooking place
holds great importance, even if appearance and appliance
use may be very different (Helping People...).

The cooking place not only has an impact on the con-
sumed nutrients but also on health, especially in poor
households that cook over an open fire. First of all, the
smoke of open fires or inefficient stoves is responsible
for many eye and respiratory problems. Children, especially
when they are small, often are burned in the fire. The open
fire has the disadvantage that the temperature is not
regulated which may lead to burned food. Flying sparks mean
a constant danger of fire (Wood Conserving Cook Stoves,
1980).

The type of cooking facility is one indicator for the
economic situation of the population in developing count-
ries. In Paraguay, 86% of all families earn less than G
20,000 ($180) per capita per annum (Fincher-Laird, 1979).
The majority of those cook on the ground using an open

fire.   A fogon is a brick or cement stove that uses fire
wood or charcoal for fuel, is the cooking facility of 10.6%
of the people. A modern gas or wood stove is owned by 3% of
the families. As income increases, the rural families will
invest in a more convenient and efficient cooking facili-
ties.   In 1978, 72.7% of the total families in Paraguay
cooked on the ground, 15.1% used a fogon, 11.7% modern
cookers and 0.5% other types of cooking apparatuses which
were in general of an improved nature (Fincher-Laird,
1979).

Food production:

        Food production is one of the major variables in
the data analysis of this study. Food production does not
include only those foods used for home consumption.   It
also includes food sold to neighbors, in the streets or on
the local market. The amount of food sold depends on the
cash needs of the family. Often cash is spent for non-food
items that can lead to a deterioration in the diet. The
diversity of crops grown influences the diversity of a
family's diet. Dietary diversity can be important for the
dietary quality, which in turn is an important element for
a good nutritional status (Dewey, 1981). Low crop diversity
and increased dependence on purchased foods leads to a
negative association in terms of the dietary diversity,
dietary quality and nutritional status of preschool chil-
dren. Dewey (1981) found that income levels were not consi-

stently related to the nutritional status.

Food which is not produced and has to be purchased normally requires much more cash than the monetary value gained if the food was sold. Many foods are not consumed at all if not produced; as for example fruits or vegetables which are an important source of many vitamins and dietary fibers. This indicates that the replacement of food with cash does not mean that the dietary quality is to be the same (Dewey, 1981).

The production of the foods to be consumed leads to a better diet, but income also affects consumption. The food consumption of a family increases if the household produces a higher food quantity than it consumes. Greater dependence on the market can have adverse effects on the consumption of specific foods. To quote Smith, Kalosa and Straus:

> Even the income hypothesis provides no assur-
> ance that the nutritional benefits possible
> from higher income necessarily overweigh the
> possibility of nutritional losses from changes
> in production patterns that take place in
> order to earn those incomes.

Livestock is an important area of production which is often forgotten. It plays an important role in human nutri-tion. Ruminants, especially small ones, can have a great impact, because they provide milk and meat, fertilizer, fuel and skin. They generate food and income. Other food-producing animals, such as chickens and pigs, also play a role in less developed countries (Doyle, 1984). The nutri-tional impact of livestock cannot be measured directly, since food availability is influenced by the other factors,

such as income generation or cash savings through animal ownership. For example, crop productivity can be increased through fertilization with manure. Nutritional deficiencies or imbalances are much more common in diets that are lacking in animal protein (Gryseels and Whalen, 1984).

Food consumption:

In developing countries, the amount of food consumed greatly depends on the area where the people live, because food is normally consumed close to the area where it is produced. Income also influences the dietary pattern. Besides physical and economical determinants, cultural habits are fundamental for food choices (Charlton, 1984). Personal characteristics, such as the internal metabolic environment also play an important role (Sims, 1972). Social stratification within the population has an impact on the food choices. If some food is typically consumed by the poor, upper classes will often not buy it. Different societies also have different ideas as to what a special kind of food should look like in terms of color, texture, and consistency. In developing countries various foods are also believed to have a supernatural or magic effect. Food habits normally change when the economic wellbeing of the family increases. This is attributed to social prestige (Sanjur, 1982).

Ward and Sanders found that the principal variables determining the consumption of calories and proteins are

income and the family size. To quote their findings from low income sample in urban and rural Brazil (Sanders and Ward, 1980):

> In the rural areas half of increased income is utilized to improve calorie consumption and two-thirds to three-fourth of increased income goes to improve the protein consumption. Hence getting an income increase directly to these low income rural groups will have a large effect on their nutrition. In the urban area only one-third of income increases go for caloric improvement and one half for protein increases.

This shows that it is much more difficult to improve the nutritional status of the urban population through financial support, because money is also used to meet other desires.

Family size is also an important factor influencing nutritional status. Sanders and Ward (1980) reported: "The effect of family size on nutritional intake is determined by the summation of the production and consumption effect of children."

In urban areas where the children participate less or not at all in the production of income or foods, they are more dependent on adult production. This leads to a decreased amount of food available per capita. Nutritional status is one measure of wellbeing for low income groups in both urban and rural areas (Sanders and Ward, 1980).

Children's nutritional status is influenced by family income and also if the mother works away from the home. The employed mother has less time for breast-feeding or preparation of special infant-weaning food. Women's employment

can have a positive effect because her income is available
for the family, while a greater male income often serves as
source for alcohol and stimulants, etc. but not necessarily
for additional food. This is especially true in regions
where male and female income are kept separately (Steward,
1981). The division of labor and other features of family
and community life assign women and especially female chil-
dren a secondary status, while the culture's food habits
often benefit men and older male children. Women's food
intake can also be influenced by cultural taboos, which
determine what kind of food can be eaten after childbirth,
for example. Nutritional need must be examined in relation
to requirements because cultural, social, and economical
factors all influence the adequacy of the nutritional in-
take (Charlton, 1984).

Investigations around the world have shown that chil-
dren under five make up over half of the malnourished
population in the world and that women are significantly
more effected than men. To quote Charlton (1984):

> Though it causes severe and possible
> irreversible physical and mental damage, chro-
> nic undernutrition works invisibly — one rea-
> son no doubt for the lack of active public
> interest in the problem. Undernutrition kills
> indirectly, by increasing the victims vulner-
> ability to infections and diseases especially
> of the gastrointestinal and respiratory type.
> Chronic undernutrition and malnutrition are
> largely ignored because the victims have no or
> only little political and even less economical
> power.

Food is essential to life; therefore the first concern of

every country must be to provide sufficient food for the
survival of the population.

Summary:

Paraguay is among the developing countries with the
greatest population growth. The political as well as econo-
mical situation today are a product of the history of this
country. Over 50 percent of the population are rural fami-
lies with an income below the poverty line, which is de-
fined to be an income under $ 160 per month. Through the
rapid population growth in developing countries movement
out of the rural areas to the large cities takes place.
Female-headed households increase through migration, mecha-
nisation, urbanisation and marginalisation. Single women
tend to be poorer, as women in general have fewer opportu-
nities on the labor market. Income and employment partly
determine the standard of living. The ratio of people
working in relationship to the dependents of a household
also plays an important role.

Type of cooking facility is related to the standard of
living. Food habits as well as health are affected by the
type of cooking facility. Many people in developing count-
ries still cook on the ground. The produced food is not
only used for home consumption but also for generating
money. A higher diversity of grown crops leads to an im-
proved dietary diversity and dietary quality. This has a
positive impact on the nutritional status. Food consumption

depends on physical, economic and cultural habits, as well as diet diversity. All these different factors have to be analyzed to make a positive contribution to the nutritional situation in a country. This study will provide some basis for improving the nutritional status of the Paraguayan population.

METHODOLOGY

Data were collected in Eastern Paraguay in San Juan Batista, the capital of the state of Misiones. The survey respondents were 177 women in low income families from eight marginal neighborhoods. In each neighborhood the sample began with the first family which was cooking on the ground and continued with the next 21 to 23 contiguous households. Only eight families lived in one neighborhood and all eight were surveyed. The interviews were carried out by the sociology students of the Teacher Training Institute under the direction of the sociology teacher in November 1983. The teacher in charge of the home economic program also participated in the survey. The objectives for the data collection were:

1. to determine the major needs of the low income families in this area of Paraguay.

2. to provide baseline data for evaluation of a proposed project with low income women.

3. to provide further information to the muncipality regarding schools.

4. to give the students from the Teacher Training Institute experience in conducting interviews especially with low income families.

The data were collected and organized by the faculty of the Teacher Training institute. Dr. Meredith Smith, Kansas State University, crosschecked the data for consistency and brought them to Kansas from Paraguay for analysis. The data analysis was carried out at the Kansas State University, using the university computers and the SAS — Package. Chi square and correlation statistics were used.

The purpose of the analysis is to determine the influence of the independent variable, marital status, on the number of children, household size, cooking facility, employment of the male, female, oldest son and oldest daughter, number of produced and purchased food articles, number of animals, and the existence of a garden.

The data obtained from the interviews and chosen for analysis were classified into three groups: demographic information, food preparation information, and food production information. Demographic information included the number of children, the household size, and the occupation of the male and the female heads of household, as well as occupation of the oldest daughter and the oldest son. The kind of cooking facility, which included cooking on the ground, cooking on a raised stove, cooking on a wood stove or cooking on a gas stove, was identified to determine how food was prepared. Respondents were asked how they procured milk, meat, rice, mandioca, sweet potato, beans and vegetables. These foods are the staple foods consumed in this area of Paraguay. Information was obtained about how the respondents received food; if they received it free, bought it, produced it or did not consume it at all. Two new variables were created, purchased foods and produced foods. Purchased foods was the number of staple foods purchased by each family. Produced foods was the number of staple foods produced by each family. Since only three of all families received free foods through the military, this number was

added to the purchased food variable. The reason for this decision was that this study focuses on food production. The interviewees also had to report the number of the animals they had, excluding dogs and cats. Because this study is concerned with dietary diversity and no quantitative information was available in terms of the amount of food consumed, the animals, milk cow, sheep, goat, horse, ox, pig and chicken/ducks, were classified in terms of having or not having them. A new variable, total animals, was defined. This variable was the number of different animals owned, except cats and dogs. It included animals used for transportation or draught power as well as food animals. The food animals variable was the number of different food animals, such as milk cows, pigs, chicken and ducks owned. The food animal and the food production variable were combined to create the variable "total produced foods".

In the preliminary chi square analysis all response levels for all cells were included. In subsequent analysis the tables were collapsed to eliminate empty cells. Number of children was categorized into three groups: less than three children, three to six children, and more than six children. These categories were related to the mean number of children per family ± SD. Household size was collapsed into the following categories: households with one to three persons, households with four to seven persons, and households with more than seven persons. Again, this classification was related to the mean household size ± SD. In terms

of the cooking facility the wood and the gas stoves were
combined to one groups since both of them represented an
improvement compared to cooking on the ground or on a
raised stove. Households with more than four rooms were
classified together. Since only a few families had more
than three different animals, the variable number of ani-
mals had four categories: one, two, three, and more than
three different animals. The variable total produced foods
was categorized into the following three groups: production
of zero to two foods, production of three to five foods and
production of six and more foods. To investigate if there
was a significant difference between living and not living
with a male in the household, marital status "married" and
"living with a concubine" formed the new category "living
with a male".

Statistical procedures used were the mean ± SD, and
frequencies. The variables were combined to make new ones
and large tables with many empty cells were collapsed. The
tables provided information about the relationship between
the independent variable marital status and the dependent
variables using chi square tests to ascertain the probabi-
lity and the significance of the relationship between the
variables. T-tests were conducted to investigate if the
presence of the male in the houshold versus no male had an
impact on the dependent variables. As a further statistical
analysis tool, the correlation coefficient by marital sta-
tus was used. These statistical procedures were applied to

create a rounded picture of the data and provide the basis for inferences, which are given in the data description and the conclusion.

DATA ANALYSIS DESCRIPTION

Since the objective of this study was to analyze the relationship between marital status and other important factors of life, marital status was chosen as the independent variable. Of the women 26% were single and 76% lived with a male in the household, either as a concubine (19%) or as a married woman (58%) (Table 5).

Table 5: Frequencies and percentages of marital status

Variable	Frequency	Percentage
single	(41)	23%
concubine	(34)	19%
married	(102)	57%
total	(177)	100%

The average number of children for those women was 5.46. Female-headed households had a smaller number of children (4.86) compared to households were a male lived (5.63). A smaller number of children was found in the households of concubines than of married women (4.94 versus 5.85). The reason might be that although the concubines were living with a male at the time of the study, this was not a permanent relationship. Fincher-Laird (1979) reports that female heads of household are older and mainly former consensual partners or widows. Younger age of the concubines could be a reason for the fewer children compared to married women. Single women have fewer children than married women because no ongoing sexual relationship takes place and so there are fewer possibilities of pregnancy.

Because single women take a higher risk in becoming preg-
nant, they even might prevent this because they do not have
the economical support of a male, who tends to have better
paid jobs than they do, as Buvnic (1983) stated. The data
about the number of children includes the total number of
children and not just those currently living in the house-
hold (Table 6).

Table 6: Number of children versus marital status

No. of children	married (N)	%	concubine (N)	%	single (N)	%	total (N)	%
1 - 3	(30)	30	(13)	42	(14)	38	(57)	34
4 - 6	(35)	35	(9)	29	(13)	35	(57)	34
> 6	(35)	35	(9)	29	(10)	27	(54)	32
total	(100)	60	(31)	18	(37)	22	(168)	100
$\bar{X} \pm SD$	5.85+3.4		4.94+2.7		4.86+2.9		5.46+3.2	

The household size was significantly related to the
marital status (P = 0.0001). The average household size for
the interviewed families was 5.69, close to the value
reported by Finsher Laird (5.8) for Paraguay. The maximum
number of people living in a household was 16. The smal-
lest household had only one person. Female-households were
smaller (3.66) than those of concubines (5.79) and married
couples (6.49). The average household size for single women
differs from the value 4.5 reported by Fincher Laird
(1979). The differences can be explained by the number of
children. The children may leave their home earlier because
they have to start earning money earlier as reported by

Merrick and Schmink (1983). The smaller size of households
of the concubines might also be explained by younger age of
the concubines. The data seem to support this age factor
repeatedly [to be discussed later in the two-way analysis
section] (Table 7).

Table 7:   Household size versus marital status

| Household size | married | | concubine | | single | | total | |
	(N)	%	(N)	%	(N)	%	(N)	%
1 - 3	(14)	14	(5)	15	(25)	61	(44)	25
4 - 7	(57)	57	(22)	65	(4)	34	(93)	53
> 7	(29)	29	(7)	21	(2)	5	(38)	22
total	(100)	57	(34)	19	(41)	23	(175)	100
$\overline{X} \pm SD$	6.49+3.1		5.79+2.4		3.66+1.9		5.69+2.96	

    Most interviewed families, 70%, had one to three rooms
per household; the average size was 2.79 with a maximum of
6. Single women had fewer rooms (2.21). Only 15% of them
had four or more rooms. This can partly be explained by the
smaller household size of the female-headed households.
Another reason for the fewer number of rooms could be that
single women are more likely to have a smaller income
(Fincher-Laird, 1979) than families with a male in the
household. The number of rooms in the house of concubines
was higher than in those of single women (2.65 versus
2.21), while married women had an average of 3.41 rooms.
This is logical since the concubines experience much less
stability in their relationship than a married couple and
so are less likely to invest in a larger house (Table 8).

Table 8: The number of rooms versus marital status

Number of rooms	married		concubine		single		total	
	(N)	%	(N)	%	(N)	%	(N)	%
1	(10)	10	(6)	18	(9)	22	(25)	14
2	(28)	28	(11)	32	(21)	51	(60)	34
3	(24)	24	(9)	26	(5)	12	(38)	22
4	(25)	25	(5)	15	(5)	12	(35)	20
5	(8)	8	(3)	9	(1)	2	(12)	7
6	(5)	5	(0)	0	(0)	0	(5)	3
total	(100)	57	(34)	19	(41)	23	(175)	100
$\overline{X} \pm SD$	3.41+1.3		2.65+1.2		2.21+1.0		2.79+1.27	

The relationship between number of rooms and marital status was significant (P = 0.0046). Married women had more rooms than concubines, while single women had the least number of rooms. The variable 'rooms' was used as an income indicator. The study does not provide information about the quantitative income of the interviewed families, but Fincher-Laird concluded that single women in rural Paraguay are poorer than those living with a male. Another income indicator than wage was chosen, because women in developing countries often work in the infomal sector (Merrick and Schmink, 1983) and no data about their income were collected.

Four different ways of cooking were included in the questionaire: cooking on the ground, cooking on a raised stove (fogon), cooking on a wood stove and cooking on a gas stove. The latter two cooking facilities were better developed than the first two. Cooking facility was expected to

be an indicator of income level, since the poor would be less likely to spend their income for a higher developed stove, while those with a higher income would desire more convenience. The hypothesis that single women would have a less developed cooking facility because they were poorer could not be supported, because no significant relationship between the marital status and cooking facility was found.

The cooking facility of the consensual partners was expected to be underdeveloped also because women who live in a consensual relationship tend to be fairly young and so are less likely to have better developed household equipment. Also, consensual partners might not necessarily share their incomes, especially not the whole amount of money, with the women. Staudt (1981) reports also that women and their partners do not always share income in many developing countries.

Most women cooked on the ground, 45%. This value is low compared to the 73% women cooking on the ground in rural Paraguay, a value which is reported by Fincher Laird (1979). Some of the interviewees had two to three different cooking facilities, but the analysis considers only the highest developed one. That these families mentioned different cooking facilities seems to imply that cooking on the ground is not thought to be negative or inferior. The group of married women possessed the best developed cooking facilities, only 39% were cooking on the ground, 27% had a gas stove (Table 9). Single women tended to have a better cooking facility than concubines. Although 55% were cooking

on the ground, 23% used a gas stove. It is possible that
the investment in a better developed stove, if they had
enough cash available, had a high priority for the single
women. Comparatively, the number of rooms seemed to be less
important.

Table 9: Cooking facility versus marital status

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cooking facility	married (N)	%	concubine (N)	%	single (N)	%	total (N)	%
on the ground	(39)	39	(18)	53	(22)	55	(79)	45
raised stove	(22)	22	(6)	18	(5)	13	(33)	19
wood stove	(12)	12	(4)	12	(4)	10	(20)	11
gas stove	(27)	27	(6)	18	(9)	23	(42)	24
total	(100)	57	(34)	20	(40)	23	(174)	100

The occupation of the women was not significantly
related to the marital status. Almost 80% of all women were
housewives, which means they were not employed in the
formal sector, 81% of the ones with a male in the household
were housewives compared to 76% of the single women. This
result was unexpected, because of the assumption that all
41 single women would be employed as their household or
family would be dependent upon a regular income. Merrick
and Schmink (1983) reported that the daughter in these
households might substitute for the mother, either at work
or in the household. The occupation of the oldest daughter
was significantly related to marital status (P=0.0003)
(Table 10).

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Table 10: The employment of the female and male head, the
          oldest son and the oldest daughter   versus
          marital status.

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Employment	married (N)	%	concubine (N)	%	single (N)	%	total (N)	%

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Female head:

| employed | (19) | 18 | (7) | 21 | (10) | 24 | (36) | 24 |
| not employed | (83) | 81 | (27) | 79 | (31) | 76 | (141) | 80 |

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| total | (102) | 58 | (34) | 19 | (41) | 23 | (177) | 100 |

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Male head:

| skilled | (47) | 50 | (17) | 55 | (0) | 0 | (64) | 50 |
| unskilled | (47) | 50 | (14) | 45 | (2) | - | (63) | 50 |

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| total | (92) | 72 | (31) | 24 | (2) | - | (127) | 100 |

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oldest son:

| employed | (27) | 26 | (6) | 18 | (14) | 34 | (47) | 27 |
| not employed | (75) | 74 | (28) | 82 | (27) | 66 | (130) | 73 |

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| total | (102) | 58 | (34) | 19 | (41) | 23 | (177) | 100 |

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oldest daughter:

| employed | (11) | 11 | (3) | 9 | (15) | 37 | (29) | 16 |
| not employed | (91) | 89 | (31) | 91 | (26) | 63 | (148) | 84 |

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```

| total | (102) | 58 | (34) | 19 | (41) | 23 | (177) | 100 |

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```

Only 11% of the married couple's and 9% of the concubine's daughters were employed, but 37% of the single women's daughters were. Although the occupation of the oldest son was not significantly related to the marital status, there was a tendency that more of the oldest sons of the single women were employed than in the households where a male was living (34% versus 24%). The oldest sons of the concubines showed the lowest employment rate (18%) and was similar to the low employment rate of their oldest daughters. This supports the hypothesis that concubines tended to be younger and so also have younger children who are less likely to work. Of the concubines 42% had only one to three children. The employment of the male was important in the households of the concubines and married women. While 55% of the males living with the concubines were skilled laborers, 50% of the married men were skilled, which is not a significant difference.

To determine the amount of food production in the different households, the availability of a garden was of basic interest. Most women (65%) had their own gardens. Not much difference was reported related to the different types of marital status. It is interesting that 76% of the concubines had a garden but only 61% of the married women did. Growing their own food evidently did not have as high a priority for married women, since 81% of them were housewives and did not work outside the home which should have given them enough time for gardening. Although they were not employed in the formal sector, only 61% had a garden

(Table 11).

Table 11: Having a garden versus marital status

Variable	married		concubine		single		total	
	(N)	%	(N)	%	(N)	%	(N)	%
no garden	(40)	39	(8)	24	(14)	34	(62)	35
having a garden	(62)	61	(26)	76	(27)	66	(115)	65
total	(1020	58	(34)	19	(41)	23	(177)	100

There was no significant relationship between the total number of foods produced and the marital status. Single women tended to produce less than concubines or married women (Table 12).

Table 12: Total produced food versus marital status

Number of foods	married		concubine		single		total	
	(N)	%	(N)	%	(N)	%	(N)	%
0 - 2	(46)	45	(15)	44	(24)	61	(85)	48
3 - 5	(33)	32	(14)	41	(12)	29	(59)	33
> 6	(23)	23	(5)	15	(5)	12	(33)	19
total	(102)	58	(34)	19	(41)	23	(177)	100

Only 45% of the male-headed households produced zero to two foods but 61% of the female headed households did so. On the other hand 23% of the married women produced six to nine foods but only 13% of the concubines and single women. The average number of total produced foods was 3.12±2.31.

Number of foods purchased or of foods produced ranged from zero to six. The average number of foods purchased was

3.59±1.8. The relationship to marital status was not signi-
ficant (Table 13). Over 50% of all women purchased four or
more foods, the highest percentage was found for concubines
with 62%. Concubines also produced the highest number of
total produced foods. This implies that they were more
involved in livestock operations than growing food plants.

Table 13: Number of purchased foods versus marital status
(P=0.7709)

Purchased foods	Married		concubines		single		total	
	(N)	%	(N)	%	(N)	%	(N)	%
0 - 2	(31)	30	(8)	24	(13)	32	(52)	29
3 - 4	(26)	25	(13)	38	(11)	27	(50)	28
5 - 6	(45)	44	(13)	38	(17)	41	(75)	42
total	(102)	58	(34)	19	(41)	23	(177)	100

Of all women 68% produced zero to two foods. Single women
and concubines tended to produce less than married women.
Single women had a higher production of three to four foods
(24%) than concubines but they represented the smallest
group (5%) among women who produced five to six foods while
16% of the married women produced this much (Table 14). The
average number of foods produced was 3.72±3.5.

Table 14: Number of produced foods versus marital status
(P=0.5629)

Produced foods	married		concubines		single		total	
	(N)	%	(N)	%	(N)	%	(N)	%
0 - 2	(64)	63	(28)	82	(29)	71	(121)	68
3 - 4	(22)	22	(3)	9	(10)	24	(35)	19
5 - 6	(16)	16	(3)	9	(2)	5	(21)	12
total	(102)	58	(34)	19	(41)	23	(177)	100

Neither the total number of animals nor the number of
food animals was significantly related to marital status.
This means that if people had animals they were likely to
have food animals. [Cats and dogs were not included]. The
mean for the total number of different animals was 1.35±1.1
and for the number of food animals 1.26±1.0. Concubines
often had the highest number of food animals: 53% of them
had two to three while only 46% of the married women had
this many. Only 27% of the single women possessed more than
one food animal (Table 15).

Table 15: Food animals versus marital status (P=0.0739).

No.of food animals	married		concubine		single		total	
	(N)	%	(N)	%	(N)	%	(N)	%
0	(28)	27	(8)	24	(12)	29	(48)	27
1	(27)	26	(8)	24	(18)	44	(53)	30
2	(34)	33	(15)	44	(9)	22	(58)	33
3	(13)	13	(3)	9	(2)	5	(18)	10
total	(102)	58	(34)	19	(41)	23	(177)	100

T-tests were conducted to investigate if there were
any differences between the households where a male was
present and those of single women (Table 16).

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Table 16: Differences between households where a male was
           present and female headed households
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```
| Variable | p-value |
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------------------------------------------------------------
```
Number of children	0.1965
Household size	0.0001
Number of rooms	0.0008
Type of cooking facility	0.4029
Total number of different animals	0.0538
Number of food animals	0.0765
Total produced foods	0.1775
Purchased foods	0.5238
Produced foods	0.2947
```
------------------------------------------------------------
```

Household size was significantly different (P=0.0001) for
male and female-headed households. This may be because less
one person is living in the female headed households. Also,
single women tended to have fewer children than women who
had an ongoing sexual relationship. Houses occupied by
families with a male head had significantly more rooms
(P=0.0008) than did those of female-headed households. The
number of total animals was related to the presence of a
male in the household (P=0.0538). Households with a male
tended to have more food animals than single women in terms
of the number of food animals although there was no signi-
ficance in terms of the t-test analysis. No significant
difference between the two household groups for the number
of children, the type of cooking facility, the total pro-
duced foods, the purchased and the produced foods was
found.

        Correlations were ascertained for variables where a

significant relationship could be reported. The results are reported in the following table (Table 17). The significant inverse correlation between household size and marital status corresponds to the other statistical analysis tools. The negative correlation between marital status and number of rooms supports the interpretation that number of rooms can be used as an income indicator. All analytical tools used in this study showed a significant relationship between this variable and marital status. Household size was positively related to the number of children and the number of rooms. Also there was a positive correlation between household size and the number of food animals, the total number of animals and the number of purchased foods. Since there was no correlation between household size and number of produced foods (P=0.4564), the food production must have been dependent on other factors. The relationship between number of animals and household size might be caused by more people being able to participate in the work with those animals. A positive correlation between number of rooms and type of cooking facility can be reported and also between number of rooms and total number of different animals. There was no correlation between number of rooms and number of food animals (P=0.0834). Total number of animals includes horses besides food animals which would be expected to be found with families which had a better socioeconomic status. Since number of rooms is only related to the total number of animals, the hypothesis that number of rooms is an income indicator, is strengthened.

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Table 17:   Significant correlations between variables used
            for this study

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Variables	correlation coefficient	p-value
marital status * household size	-0.380	0.0001
marital status * number of rooms	-0.283	0.0001
number of children * purchased foods	0.158	0.0411
number of children * household size	0.568	0.0001
household size * number of rooms	0.294	0.0001
household size * total number of different animals	0.154	0.0416
household size * number of food animals	0.159	0.0355
household size * number of purchased goods	0.160	0.0347
number of rooms * cooking facility	0.389	0.0001
number of rooms * total number of different animals	0.149	0.0491
total number of different animals * number of food animals	0.957	0.0001
total number of different animals * total produced foods	0.762	0.0001
total number of different animals * purchased foods	-0.277	0.0002
total number of different animals * produced foods	0.480	0.0001
number of food animals * total produced foods	0.733	0.0001
number of food animals * purchased foods	-0.220	0.0033
number of food animals * produced foods	0.417	0.0001
total produced foods * purchased foods	-0.504	0.0001
total produced foods * produced foods	0.924	0.0001
purchased foods * produced foods	-0.549	0.0001

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The number of purchased foods was negatively correlated to
the number of produced foods what implies that purchased
foods replaced produced foods and vice versa. [The rela-
tionship between the food production variables will be
discussed in the following chi square analysis by two way
tables].

To investigate the relationship of different demogra-
phic, food preparation, and food production variables to
each other in their correlation to marital status, two-way
tables were applied (Table 19).

```
-----------------------------------------------------------------
Table  18:  Effect  of marital status on socioeconomic  and
            food  production  related variables  using   chi
            square statistics.
-----------------------------------------------------------------
Variable                      Married    Concubine    Single
                             (p-value)   (p-value)   (p-value)
-----------------------------------------------------------------
```

Variable	Married (p-value)	Concubine (p-value)	Single (p-value)
number of children *			
household size	0.0001	0.0435	
number of rooms		0.0541	
cooking facility			0.0229
cooking facility *			
number of rooms	0.0053	0.0536	
employment of oldest son			0.0320
total produced foods			0.0058
purchased foods	0.0136		
total different animals *			
number of food animals	0.0001	0.0001	0.0001
total produced goods	0.0001	0.0005	0.0018
purchased foods	0.0069		
produced foods			0.0440
number of food animals *			
total produced foods	0.0001	0.0050	0.0013
purchased foods	0.0463		
produced foods	0.0022		
total produced foods *			
purchased food	0.0001		0.0306
produced food	0.0001	0.0001	0.0001
purchased foods *			
produced foods	0.0001	0.0444	
employment of male	0.0001		
produced foods *			
employment of male	0.0001		
employment of oldest daughter		0.0437	

Number of children and household size vs number of rooms:

For married couples and single women there was no
significant relationship between the number of children and
the number of rooms. But there was a tendency for consen-
sual partners (P=0.054) to have an increasing number of
rooms with an increasing number of children (Table 19). Of
the concubines who had four to six children, 44% had four
or more rooms, and 67% of the ones with more than six
children had three rooms in the household; 11% of them with
four or more children had four to six rooms, compared to
48% of the married women and 10% of the single women.
Actually, all households were expected to have more rooms
if there were more children not only the concubine's ones.
The result might be explainable if not all the children
lived at home; since married couples had a higher average
number children, some may have been already independent
and living on their own. The same might be true for single
women because they seemed to be older than the concubines
(Fincher-Laird, 1979). Fincher-Laird already reported, the
household size of the single women was smaller than that of
the concubines. This supports the preceding interpretation,
that in the household of concubines lived more children.

No relationship was found between the number of rooms
and the household size, which supports the idea that the
room number can be used as an income indicator because the
number of rooms would increase with higher income and not

Table 19:   Number of children versus number of rooms
            by marital status

| No. of rooms | number of children | | | | | | |
| | 1 - 3 | | 4 - 6 | | > 6 | | total |
	(N)	%	(N)	%	(N)	%	(N)	%
married women:								
1	(3)	10	(5)	14	(2)	6	(10)	10
2	(9)	30	(11)	31	(7)	21	(27)	28
3	(10)	33	(6)	17	(8)	24	(24)	24
>3	(8)	27	(13)	37	(16)	48	(37)	38
total	(30)	31	(35)	36	(33)	34	(98)	100
							P=0.4715	
concubines:								
1	(3)	23	(2)	22	(0)	0	(5)	16
2	(5)	38	(3)	33	(2)	22	(10)	32
3	(3)	23	(0)	0	(6)	67	(9)	29
>3	(2)	15	(4)	44	(1)	11	(7)	23
total	(13)	42	(9)	29	(9)	29	(31)	100
							P=0.054	
single women:								
1	(2)	14	(2)	15	(5)	50	(9)	24
2	(9)	64	(6)	46	(3)	30	(18)	49
3	(2)	14	(1)	8	(1)	10	(4)	11
>3	(1)	7	(4)	31	(1)	10	(6)	16
total	(14)	38	(13)	35	(10)	27	(37)	100
							P=0.232	

when it was needed. It must not be forgotten that the
interviewees were low income women.

Number of children versus cooking facility:

For married couples and concubines, number of children
did not influence the type of the cooking facility. It was
expected that families with more children had less improved
cooking facilities because of a higher number of depen-
dents. Musgrove (1980) reported that the more dependents a
household has, the more likely it is to be poor. Of the
concubines 55% cooked on the ground, 61% with more than
three children did not even have a raised stove. The reason
for no relationship between the number of children and the
cooking facility could be that the male is the deciding
factor in the income and might not be interested in an
improvement of the cooking facility even if more money were
available. There was a significant relationship in terms of
these two parameters for the single women (P=0.0229), 90%
of these families with more than six children cooked on the
ground (Table 20). Single women seemed to be more intere-
sted in improving their cooking facility than other women,
it was possible. Fifty-four percent of those with four to
six children had a wood or gas stove and 31% of those with
one to three children. The single women who had more than
six children were most likely to cook on the ground. A
highly developed cooking facility was owned by 33% of the
single women, but only by 26% of the concubines and 38% of
the married women although the study suggests that single

Table 20: Number of children versus cooking facility by
         marital status

```
                         number of children
type of cooking facility  1 - 3    4 - 6     >6      total
                         (N)  %   (N)  %   (N) %   (N)   %
```

married women:

type of cooking facility	(N)	%	(N)	%	(N)	%	(N)	%
on ground	(11)	38	(12)	35	(15)	43	(38)	39
fogon	(5)	17	(10)	29	(7)	20	(22)	22
wood/ gas	(13)	45	(12)	35	(13)	37	(38)	39
total	(29)	30	(34)	35	(35)	36	(98)	100

P=0.7644

concubines:

type of cooking facility	(N)	%	(N)	%	(N)	%	(N)	%
on ground	(6)	46	(6)	67	(5)	56	(17)	55
fogon	(3)	23	(1)	11	(2)	22	(6)	19
wood/ gas	(4)	31	(2)	22	(2)	22	(8)	26
total	(13)	42	(9)	29	(9)	29	(31)	100

P=0.8990

single women:

type of cooking facility	(N)	%	(N)	%	(N)	%	(N)	%
on ground	(5)	38	(5)	38	(9)	90	(19)	53
fogon	(4)	31	(1)	8	(0)	0	(5)	14
wood/ gas	(4)	31	(7)	54	(1)	10	(12)	33
total	(13)	36	(13)	36	(10)	28	(36)	100

P=0.0229

single women were the poorest of all women.

Babb (1980) reported that children of single women have to take over economic responsibility early. The only employment within all the households which seemed to be significantly related to the type of the cooking facility (P=0.032) is the one of the oldest son in the women-headed households (Table 21).

Table 21: Employment of the oldest son versus cooking facility for single women (P=0.032).

Type of cooking facility	employment of oldest son					
	employed		unemployed		total	
	(N)	%	(N)	%	(N)	%
on ground	(7)	54	(15)	56	(22)	55
fogon	(4)	31	(1)	4	(5)	13
wood/ gas	(2)	15	(11)	41	(13)	33
total	(13)	33	(27)	68	(40)	100

Of the single women, 41% had an improved cooking facility when the son was not employed and only 15% of these women had a gas or a wood stove in case the son was employed. This shows again that, in case males mainly generate the income for the family they use it according to a different priority system than women. The single women who had an income independent from a male had better improved cooking facilities.

No. of children vs. number of people living in household:

There was a significant relationship between the num-
ber of children and the household size for married women

(P=0.0014) and concubines (P=0.0015). This was expected
since more children would increase the number of people
living in the household. In the case of married couples
some of the older children might have moved out already;
the concubine's households tended to have younger children
anyway and therefore also more people living there. Surprisingly there was no relationship between the number of
children and the household size for single women (Table
22). This might be caused by children being older and/ or
leaving their home earlier. Forty percent of the single
females with more than six children lived in households
with one to three people while only 11% of the married
women and none of the concubines lived in households this
small. Actually no concubine with more than three children
had a household size of one to three persons and only 23%
of the women with one to three children did so. This seems
to support the thesis that the children of concubines are
generally younger.

Number of rooms versus cooking facility:

The number of rooms in households of married couples
was significantly related to the kind of cooking facility
these families were using (P=0.0053) (Table 23). Of the
families with four rooms or more, 63% possessed a wood or
gas stove, while 48% of those with three rooms and 50% of
those with two rooms cooked on the ground. This suggests
that improvement of cooking facility does not have a high
priority in this rural society in Eastern Paraguay. Some of

Table 22: Number of children versus household size by
            marital status

Household size	number of children						
	1 - 3		4 - 6		> 6		total
	(N)	%	(N)	%	(N)	%	(N)	%

---

married women:

1 - 3	(5)	17	(3)	9	(4)	11	(12)	24
4 - 7	(25)	83	(21)	64	(11)	31	(57)	58
> 7	(0)	0	(9)	27	(20)	57	(29)	30

| total | (30) | 31 | (33) | 34 | (35) | 36 | (98) | 100 |
| | | | | | | | P=0.0014 | |

---

concubines:

1 - 3	(3)	23	(0)	0	(0)	0	(3)	10
4 - 7	(10)	77	(8)	89	(4)	44	(22)	71
> 7	(0)	0	(1)	11	(5)	56	(6)	19

| total | (13) | 42 | (9) | 29 | (9) | 29 | (31) | 100 |
| | | | | | | | P=0.0015 | |

---

single women:

1 - 3	(11)	78	(7)	54	(4)	40	(22)	59
4 - 7	(3)	21	(6)	46	(4)	40	(13)	35
> 7	(0)	0	(0)	0	(2)	20	(2)	5

| total | (14) | 38 | (13) | 35 | (10) | 27 | (37) | 100 |
| | | | | | | | P=0.0840 | |

```
-------------------------------------------------------------
Table  23:  Cooking facility versus number or rooms by
            marital status
-------------------------------------------------------------
                            Number of Rooms
Cooking      1          2          3         >3       total
facility  (N)  %     (N)   %    (N)   %    (N)  %    (N)    %
-------------------------------------------------------------
married women:
--------------
on ground (6) 67    (14) 50    (11) 48   ( 6) 16   (37)   38
fogon     (1) 11    ( 8) 29    ( 5) 22   ( 8) 21   (22)   22
wood/ gas (2) 22    ( 6) 21    ( 7) 30   (24) 63   (39)   40
-------------------------------------------------------------
total     (9)  9    (28) 29    (23) 23   (38) 39   (98) 100
                                                   P=0.0053
-------------------------------------------------------------

concubines:
-----------
on ground (4) 67    (6)  55    (5)  56   (3)  38   (18)   53
fogon     (0)  0    (2)  18    (4)  44   (0)   0   ( 6)   18
wood/ gas (2) 33    (3)  27    (0)   0   (5)  63   (10)   29
-------------------------------------------------------------
total     (6) 18    (11) 32    (9)  26   (8)  24   (34)  100
                                                   P=0.0536
-------------------------------------------------------------

single women:
-------------
on ground (5) 56    (12) 60    (3)  60   (2)  23   (22)   55
fogon     (2) 22    ( 1)  5    (1)  20   (1)  17   ( 5)   13
wood/ gas (2) 22    ( 7) 35    (1)  20   (3)  50   (13)   33
-------------------------------------------------------------
total     (9) 23    (20) 50    (5)  13   (6)  15   (40)  100
                                                   P=0.7237
-------------------------------------------------------------
```

the 177 interviewed women reported a fireplace on the
ground in addition to a higher developed cooking facility.
A possible interpretation is that these less developed
cooking facilities were part of the culture and not some-
thing to be negotiated if there is socioeconomical improve-
ment. Concubines tended to have a higher developed cooking
facility if there were more rooms in the household
(P=0.0536). More concubines cooked on the ground than mar-
ried women: 53% versus 38%. There was no relationship
between the type of cooking facility of single women and
the number of rooms in their household. Seventy two percent
of the single women had only one or two rooms, 55% cooked
on the ground, both consistent with their smaller household
sizes and lower incomes.

Number of rooms versus food production variables:

There was no significant relationship between the
number of rooms and the food production variables, which
implies that income was not a major factor for determining
the dietary diversity of any of the interviewed low income
families. This was expected, since Dewey reports that the
dietary diversity depends on food production. Income is not
consistenly related to the nutritional status.

Cooking facility versus number of purchased foods:

For married women there was a significant relationship
(P=0.0136) between cooking facility and number of purchased

foods (Table 24).

Table 24: Number of purchased foods versus type of cooking facility for married women.

Cooking facility	number of purchased foods							
	0 - 2		3 - 4		5 - 6		total	
	(N)	%	(N)	%	(N)	%	(N)	%
on ground	(7)	23	(16)	62	(16)	36	(39)	39
fogon	(11)	37	(5)	19	(6)	14	(22)	22
wood/ gas	(12)	40	(5)	19	(22)	50	(39)	39
total	(30)	30	(26)	26	(44)	44	(100)	100
							P=0.0136	

The families which purchased many foods must have had enough cash available to do so. As suggested before the improvement of the cooking facility did not have a high priority for married couples. Thus, when they finally developed their stove, they would be able to buy more foods also. Most married women with an improved cooking facility produced either zero to two (31%) or five to six foods (56%); 82% of those cooking on the ground purchased at least three foods out of six possible. The results suggest that married women had either a high or a very low food production. A two-way table with the employment of married women versus the number of food items purchased showed that 54% of both groups purchased four to six foods. However, there was a significant relationship between the kind of employment of the male and the number of foods purchased for married women (P=0.0001) (Table 25).

Table 25: Number of purchased foods versus the employment skill level of the male for married women and concubines

No. of foods	Male employment skill level					
	skilled		unskilled		total	
purchased	(N)	%	(N)	%	(N)	%
married women:						
0 - 2	(6)	13	(23)	49	(29)	31
3 - 4	(11)	23	(14)	30	(25)	27
5 - 6	(30)	64	(10)	21	(40)	43
total	(47)	50	(47)	50	(94)	100
					P=0.0001	
concubines:						
0 - 2	(2)	12	(4)	29	(6)	19
3 - 4	(7)	41	(6)	43	(13)	42
5 - 6	(8)	47	(4)	29	(12)	39
total	(17)	55	(14)	45	(31)	100
					P=0.4646	

Families where the men were skilled laborers purchased more foods than families having unskilled men laborers, where 49% bought only zero to two food articles. Almost two-thirds of the families of men with an employment which requires education purchased five to six items. This result is expected because the skilled workers are likely to have a higher income. Thus, they would also be able to purchase more foods instead of investing their time in the production. A similar tendency is to report for concubines although the employment skill level is not significantly related to the number of foods purchased.

Cooking facility versus total produced foods:

The type of cooking facility was significantly related
to the total number of foods produced (P=0.0058) but only
for single women (Table 26).

Table 26: Cooking facility versus total produced foods for
          single women.

Cooking facility	Total produced foods						
	0 - 2		3 - 5		> 5		total
	(N)	%	(N)	%	(N)	%	(N)	%
on ground	(12)	52	(7)	58	(3)	60	(22)	55
fogon	(1)	4	(4)	33	(0)	0	(5)	13
wood/ gas	(10)	43	(1)	8	(2)	40	(13)	32
total	(23)	58	(12)	30	(5)	13	(40)	100

The cooking facility seemed to be improved if the total
food production was either high (> 5) or low (0 - 2) for
single women. If they produced a medium amount of food,
they were not able or not interested in improving the
cooking facility since only 8% of those who produced three
to four different foods had a wood or a gas stove. The
reason could be that they had more money for other purposes
if the total food production was high, and if the total
food production was low, they had other sources of income
which allowed them to use some of it for developing the
cooking facility.

Produced foods versus employment of husband or daughter:

The type of employment of the husband was signifi-
cantly related to the number of produced foods for married

women. Fourty three percent of the wives of skilled labo-
rers did not produce any foods and only 4% produced more
than five, while 30% of the unskilled laborers produced
five to six foods (Table 27).

Table 27: Number of produced foods versus the male em-
ployment skill level for married women and
concubines

No. of foods produced	Male employment skill level					
	skilled		unskilled		total	
	(N)	%	(N)	%	(N)	%
married women:						
0 - 2	(41)	87	(15)	32	(56)	60
3 - 4	(4)	9	(18)	38	(22)	23
5 - 6	(2)	4	(24)	51	(24)	26
total	(47)	50	(45)	50	(94)	100
					P=0.0001	
concubines:						
0 - 2	(16)	94	(10)	71	(26)	84
3 - 4	(1)	6	(1)	7	(2)	6
5 - 6	(0)	0	(3)	21	(3)	10
total	(17)	55	(14)	45	(31)	100
					P=0.0613	

The reason could be that the women married to an unskilled
worker wanted to make up for limited income and therefore
had to produce food. The male's income might be insuffi-
cient for the families needs, especially if the male used a
large amount for personal "needs" such as alcohol or if
there were many dependents (Musgrove, 1980). There was a
similar trend for concubines, but the relationship was not
significant.

Interestingly there was a significant relationship

(P=0.0437) between the employment of the oldest daughter of the concubines and the number of produced foods (Table 28).

Table 28: Employment of the oldest daughter versus number of foods produced for concubines

Foods produced	employment of oldest daughter				total	
	unemployed		employed			
	(N)	%	(N)	%	(N)	%
0 - 2	(26)	84	(2)	67	(28)	82
3 - 4	(2)	6	(1)	33	(3)	9
5 - 6	(3)	10	(0)	0	(3)	9
total	(31)	91	(3)	9	(34)	100
					P=0.0437	

There was a trend to produced more if the oldest daughter worked (33%). Controversely, if she was unemployed, 10% of the concubines produced five to six foods but none of the concubines produced that many foods if the daughter was employed.

Number of purchased foods versus number of produced foods:

There was a significant relationship between the number of purchased and the number of produced food articles for married couples (P=0.0001) and concubines (P=0.0444) showing that the more the family purchased the less it produced (Table 29). About one-fourth of all women did not produce any food. If they produced only one item, it was most often vegetables. Why male headed households show this significance but not female-households cannot be explained with the available data. One reason could be that female-

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Table 29: Purchased foods versus produced foods by marital
status

purchased foods	produced foods						
	0 - 2		3 - 4		5 - 6		total
	(N)	%	(N)	%	(N)	%	(N)	%

married women:

0 - 2	(8)	13	(7)	32	(16)	100	(31)	30
3 - 4	(11)	17	(15)	68	(0)	0	(26)	25
5 - 6	(45)	70	(0)	0	(0)	0	(45)	44
total	(64)	63	(22)	22	(16)	16	(102)	100

P=0.0001

concubines:

0 - 2	(4)	14	(1)	33	(3)	100	(8)	24
3 - 4	(11)	39	(2)	67	(0)	0	(13)	38
5 - 6	(13)	46	(0)	0	(0)	0	(13)	38
total	(28)	82	(3)	9	(3)	9	(34)	100

P=0.0444

single women:

0 - 2	(6)	21	(5)	50	(2)	100	(13)	32
3 - 4	(6)	21	(5)	50	(0)	0	(11)	27
5 - 6	(17)	59	(0)	0	(0)	0	(17)	41
total	(29)	71	(10)	21	(2)	5	(41)	100

P=0.0761

headed households have a lower rate of consumption and a lower dietary diversity, so that they if they did not produce a food they often did not purchase it either. Dewey (1981) stated that many foods are not consumed if not produced. The total number of produced foods showed no relationship to the number of purchased foods for single women and concubines. For all households there was a significant relationship between the number of produced foods and the total food production (P=0.0001), since the total production was defined as the sum of produced foods and the number of animals.

Total number of animals versus the number of purchased foods:

There was a significant inverse relationship between the total number of animals and the number of purchased foods for married couples (P=0.0069) (Table 30).

Table 30: Total number of animals versus number of purchased foods for married women

total number of animals		number of foods purchased					
	0 - 2		3 - 4		5 - 6		total
	(N)	%	(N)	%	(N)	%	(N)	%
married women:								
0	(5)	16	(6)	23	(16)	36	(27)	26
1	(4)	13	(7)	27	(14)	31	(25)	25
2	(11)	35	(8)	31	(14)	31	(33)	32
3	(9)	29	(3)	12	(1)	2	(13)	13
4	(2)	6	(2)	8	(0)	0	(4)	4
total	(31)	30	(26)	25	(45)	44	(102)	100
							P=0.0069	

The more animals the family had, the fewer foods were purchased. This shows that the animals contributed to the food supply of the family and substituted for purchased foods. Although animals also generate income (Doyle, 1984), this does not seem to be used for purchasing foods. Concubines as well as single women seemed to raise animals for the purpose of income generation because no relationship between these two variables can be reported. Thus, the produced foods would serve the purpose of income generation more than the one of food consumption of the family. For food animals there also was a significant relationship to the number of foods purchased for married women (P=0.0049).

Number of total animals versus number of produced foods:

As expected there was a significant relationship between the total number of animals and the number of produced foods for married couples (P=0.0001) or single women (P=0.0440) but surprisingly not for concubines. However, concubines had the highest production of animals. They did not produce so many other foods; 82% of them produced only zero to two foods out of the six possible (Table 31). This could mean a specialisation in terms of raising animals for marketing, an assumption which can not be proven with the available data.

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Table  31:  Total number of animals versus number of  foods
            produced by marital status
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total number	number of food produced							
	0 - 2		3 - 4		5 - 6		total	
of animals	(N)	%	(N)	%	(N)	%	(N)	%
married women:								
0	(24)	38	(3)	14	(0)	0	(27)	26
1	(18)	28	(7)	32	(0)	0	(25)	25
2	(19)	30	(7)	32	(7)	44	(33)	22
3	(3)	5	(2)	9	(8)	50	(13)	13
4	(0)	0	(3)	14	(1)	7	(4)	4
total	(64)	63	(22)	22	(16)	15	(102)	100
							P=0.0001	

concubines:								
1	(7)	25	(0)	0	(0)	0	(7)	21
2	(8)	29	(0)	0	(0)	0	(8)	24
3	(11)	39	(3)	100	(2)	67	(16)	47
4	(2)	7	(0)	0	(1)	33	(3)	9
total	(28)	82	(3)	9	(3)	9	(34)	100
							P=0.6116	

single women:								
0	(9)	31	(3)	30	(0)	0	(12)	29
1	(14)	48	(3)	30	(0)	0	(17)	41
2	(5)	17	(2)	20	(2)	100	(9)	22
3	(1)	3	(2)	20	(0)	0	(3)	7
total	(29)	71	(10)	21	(2)	5	(41)	100
							P=0.0440	

Number of animals versus total number of produced foods:

There was a significant relationship between the total
number of foods produced and the total number of animals
for married women (P=0.0001), concubines (P=0.0016) and
single women (P=0.0024). Total production was slightly
higher for married women than for single women or concu-
bines (Table 32). There was also a significant relationship
between the number of food animals and the total number of
produced foods for all three subclasses of women.

Total number of animals versus number of food animals:

As expected there was a significant relationship be-
tween total number of animals and number of food animals
(P=0.0001) for all women. However, the married couples and
concubines tended to have more animals than the single
women. Of the married women, 46% had two to three food
animals, as did 53% of the concubines while only 27% of the
single women possessed this many. Animals require much time
commitment and money, and the single women had to carry the
responsibility of the household and the education of there
children themselves. Thus, single women are to be less
likely to take the risk of a livestock operation. Animals,
especially large animals, require a financial input before
they generate income and/ or food. This result seems to
strengthen the hypothesis that single women were poorer.

Table 32 : Total food production versus total number of
          different animals by marital status

Total pro-duction (N) %	0 (N) %	1 (N) %	2 (N) %	3 (N) %	4 (N) %	total (N) %
married women:						
0 - 2	(24) 99	(15) 60	(7) 21	(0) 0	(0) 0	(46) 45
3 - 5	(3) 11	(10) 40	(16) 49	(3) 23	(1) 25	(33) 32
> 5	(0) 0	(0) 0	(10) 30	(10) 77	(3) 75	(23) 23
total	(27) 27	(25) 25	(33) 32	(13) 13	(4) 4	(102) 100
						P=0.0001
concubines:						
0 - 2	(7)100	(6) 75	(2) 13	(0) 0	(0) 0	(15) 44
3 - 5	(0) 0	(2) 25	(10) 63	(2) 67	(0) 0	(14) 41
> 5	(0) 0	(0) 0	(4) 25	(1) 33	(0) 0	(5) 12
total	(7) 21	(8) 24	(16) 47	(3) 9	(0) 0	(34) 100
						P=0.0016
single women:						
0 - 2	(9) 75	(13) 77	(2) 22	(0) 0	(0) 0	(24) 59
3 - 5	(3) 25	(4) 24	(4) 44	(1) 33	(0) 0	(12) 29
> 5	(0) 0	(0) 0	(3) 33	(2) 67	(0) 0	(5) 12
total	(12) 29	(17) 42	(9) 22	(3) 7	(0) 0	(41) 100
						P=0.0024

CONCLUSIONS

The study is an analysis of interviews with low income rural women in the marginal area of San Juan Batista, Paraguay, in November, 1983. These woman were divided into three subclasses according to their marital status: married, concubines and single women. The justification for this classification is that the literature reports female-headed households to be the poorest in the world. Therefore, there should be a focus on these female-headed households for development work. The influence of marital status on demographic variables, food preparation and food production of these women were investigated.

The study showed that the marital status was not significantly related to number of children but to the household size. Female-headed households were significantly smaller than those headed by a male. For single women, there was no significant relationship between number of children and household size which implied that they either had people other than children living with them or their children had left home. In future studies the number children still living in the household should be determined in order to analyze the relationship between the number of children and the other variables with more precision. A determination of the age of the women should also be included.

A very high percentage (almost 80%) of the women were not employed in the formal sector, which suggests that many of them had some kind of income from the informal sector.

This inference can also be supported by the fact that not all of the women who were not employed had a garden. Thus, they would have time to be engaged in other activities. There is no estimation how much time a garden requires, so that no further inferences can be made. There was a significant relationship between marital status and employment of the oldest daughter. For female-headed households, when the mother was not working, the oldest daughter often substituted and earned money in the formal sector. The age of the oldest child would be helpful for further analysis. This study suggested that the concubines were younger than the other women, especially the single women. Therefore they probably had younger children also who were not old enough to work. This can be supported by the fact that they made up the highest percentage among the women with one to three children (42%). Also their oldest son and oldest daughter showed the lowest rate of employment.

The type of cooking facility in the households of the three groups was planned to be used as an income indicator. This was not possible because it was not significantly related to the marital status and most women were cooking on the ground. Few children [except for single women] and a small household size did not lead to a better developed cooking facility although more income for living expenses would be available. The improvement of the cooking facility does not seem to be a high priority among families of married women and concubines. This is inferred since several women reported more than one cooking facility in the

interviews. The improvement was likely to be an indicator of status, but other developmental activities such as to live in a house with more rooms seemed to be more important.

The occupation of the oldest son in female-headed households was significantly related to the cooking facility; if the son had some kind of employment, the cooking facility tended to be worse. This implies that the female-headed households were dependent on the income of the son and that he was not interested in improving the cooking facility. To further support this inference it would be necessary to have data about the intra-household division of resources. For married women, when the number of rooms increased, the cooking facility improved also. This suggests that if there was enough money for more rooms in the house, a better developed cooking facility was also possible. The higher number of rooms, however, seemed to be a priority. The expected significant relationship between the number of children and the cooking facility was not found for married women and concubines. This supports the earlier interpretation that the male, if there were more money available because of less children, would not necessarily encourage its use for better cooking facilities.

For single women the cooking facility improved with a decreasing number of children. Since so many low income people cook on the ground in this part of Paraguay, improvement in cooking facilities would be beneficial. The

temperature of an open fire can not be regulated well if
people cook on the ground and food can easily be burned.
Additionally, an open fire consumes more fuel and is dange-
rous for small children. If the improvement of the cooking
facility should be an aim for developmental work in this
area in Paraguay, this different priority system for diffe-
rent households must be taken into account.

There was a significant relationship between the cook-
ing facilities in female headed households and the number
of children. The more children these single women had, the
less improved was their cooking facility.

Number of rooms was used as an income indicator be-
cause it was significantly related to marital status. Mar-
ried women tended to have more rooms than concubines and
single women. Even if this study does not provide informa-
tion about the quantitative amount of income, the difficul-
ty of obtaining such a measure suggests the need for an
alternative indicator of income. Fincher-Laird concluded
that single women in rural Paraguay are generally poorer
than those living with a male. Fewer animals owned by
single women also implies that they were more likely to be
poor. Number of rooms was correlated to the household size,
but there was no significant relationship what supports
that the interviewed families were low income families who
were not necessarily able to adapt the size of the house to
the number of people living there. Number of children of
the concubines was significantly related to number of
rooms. This might be caused by younger children or a

higher income. Consensual partners were more likely to have
a higher income than married women, because 55% of the male
had an employment which required some skills or education.

In terms of the food production, more concubines had a
garden than single or married women. Female-headed house-
holds produced by far the least amount of total produced
foods. Over 60% of the single women produced less than
three out of nine possible foods. Concubines had the high-
est percentage of two to three different food animals. Over
50% had two to three out of three possible while only 27%
of the single women possessed more than one kind of food
animal. Animals, especially large animals, require, besides
hard work, a larger financial input. This could be the
reason why the female-headed households had the fewest
different animals. Over 50% of all women purchased more
than four out of six possible foods. Concubines purchased
the highest number of different foods but also produced the
largest amount of food. They tended to produce livestock
rather than garden foods which is shown by the fact that
their production of different foods was the lowest of all
women. Over 80% produced zero to two different foods. Since
the concubines purchased a high number of different foods,
it can be assumed that their diet diversity was good in
contrast to the single women, who did not purchase many of
the six different foods if they did not consume them. This
can be supported by the fact that there was no significant
relatioship between the number of purchased and produced

foods. For an analysis of the food production on the nutri-
tional status of the different families, twenty-four hour
recalls would have to be collected.

This study suggests to institute a program for impro-
ving the cooking facility in this part of Paraguay. Before
that it would be necessary to find out why males did not
seem to be very interested in improving the cooking facili-
ty. The justification for a program as such would be that
fuel could be saved, so that additional money for nutritio-
nal, as well as other living expenses would be available.
All low income women should have access to the program
since most families are still cooking on the ground. Em-
ployed males should be included in the development program
because of their negative influence on the improving of
the cooking facility in this study. Without their support
such a program would be likely to fail.

Because most women were not employed in the formal
sector, nutrition education programs could be instituted to
expand the dietary diversity by providing information about
growing different foods and also preparing these foods for
meals. Single women, who had thew lowest production, should
be focused on, because they were likely to have a low
dietary diversity having the fewest number of total pro-
duced foods while they did not purchase more foods than
other women. Since gardening skills could be used to
substitute for income or even to generate some income by
selling the products, women might feel attracted to a
program as such. The project should be production oriented.

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INFLUENCE OF MARITAL STATUS ON SOCIOECONOMIC AND

FOOD PRODUCTION VARIABLES IN RURAL

PARAGUAY

by

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In November 1983, a survey of 177 low income households was conducted in San Juan Batisita in a rural area of Paraguay. The purpose of the study was to analyze the relationship between the marital status of the women and selected demographic, food production, and preparation variables using chi square analysis and t-tests.

Married women had the greatest number of the children and the largest household size, followed by the concubines, and then single women. The number of rooms per household, used as an income indicator, was significantly related to the type of cooking facility for married women and concubines. As income increased the cooking facility improved. Because cooking facility was not significantly related to marital status, it seemed to have less priority in terms of investment for male-headed households. Number of rooms was not significantly related to any food production variable. This implies that income did not determine the diet diversity. For single women there was no relationship between the number of different foods purchased and foods produced. This suggests that they often did not consume a food if they did not produce it. For married women the cooking facility improved as the number of purchased foods increased. Findings of this study will be useful in designing nutrition programs for low income families in Paraguay.